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Conference Abstract

Driving Data and Human Ecosystem Change: Integrating Expertise and Agency

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Abstract

Mutual science/data-question goals catalyze action (Kading and Kingston 2020) yet hurdles remain prevalent across ecosystems (Scott 2023). We see opportunities for potential improvements for building a more sustainable commons network, if "external" expertise could be brought into the data mobilization and knowledge-sharing tools and processes. Using Polycentric Governance (PG) model ideas, we share some current experiences from the Species File Group (SFG) and our collaborators. PG is defined as "a system consisting of multiple stakeholders who collaborate to govern a limited, common-pool resource" (see Scott 2023).

From this commons perspective, multiple groups, including the Society for the Preservation of Natural History Collections (SPNHC) and Biodiversity Information Standards (TDWG) organizations and members, invest in our **socio-technical-environmental (STE)** shared resources, e.g., data, collections, knowledge, human capacity, infrastructure, and the planet. We want to avoid a "tragedy of the commons" scenario, where a shared resource disappears or becomes unusable (e.g., infrastructure fails). Awareness, understanding, and expertise need to be present across our common pool. The PG model suggests one needs a "good social fit" between the groups and the elements in the common-pool resources system. Some PG network positive attributes include clear **benefits to diverse groups in the pool**, processes that **foster social learning**, and **success in overcoming interlinked challenges** (Scott 2023).

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From SFG activities, we see the above benefits. Cross-discipline and department local events held (e.g., workshops) broaden spheres-of-influence and foster awareness and mentoring opportunities. Day-to-day interactions with our collections leadership and software adopters give us the chance to share the existence/value in the work of such projects as Plazi, Bionomia, Global Names, Catalogue of Life, and tools like OpenRefine. Through this knowledge transfer and discovery, members of our community now ask for more actionable feedback and features. Our collaborators now adopt community-based transparent communication tools (e.g., GitHub issue trackers, Slack®) improving community issue management (e.g., fewer emails!) and engagement. With iNaturalist using our TaxonWorks (TW) API, people finding taxon name issues at iNaturalist can now report via TaxonWorks issue tracker for swift resolution (for some taxon names). New TW tasks (e.g., Project Vocabulary Fig. 1, Field Synchronize Fig. 2) empower our collaborators to visualize and edit (even with regular expressions, a.k.a. regex!) the data in a given field in their own project (see Distinct Values - Why This Data Directory?). Seredipitously, large language model (LLM) tools like ChatGPT make it easier to learn and write regex as needed. All of these result in increased agency and transparency.

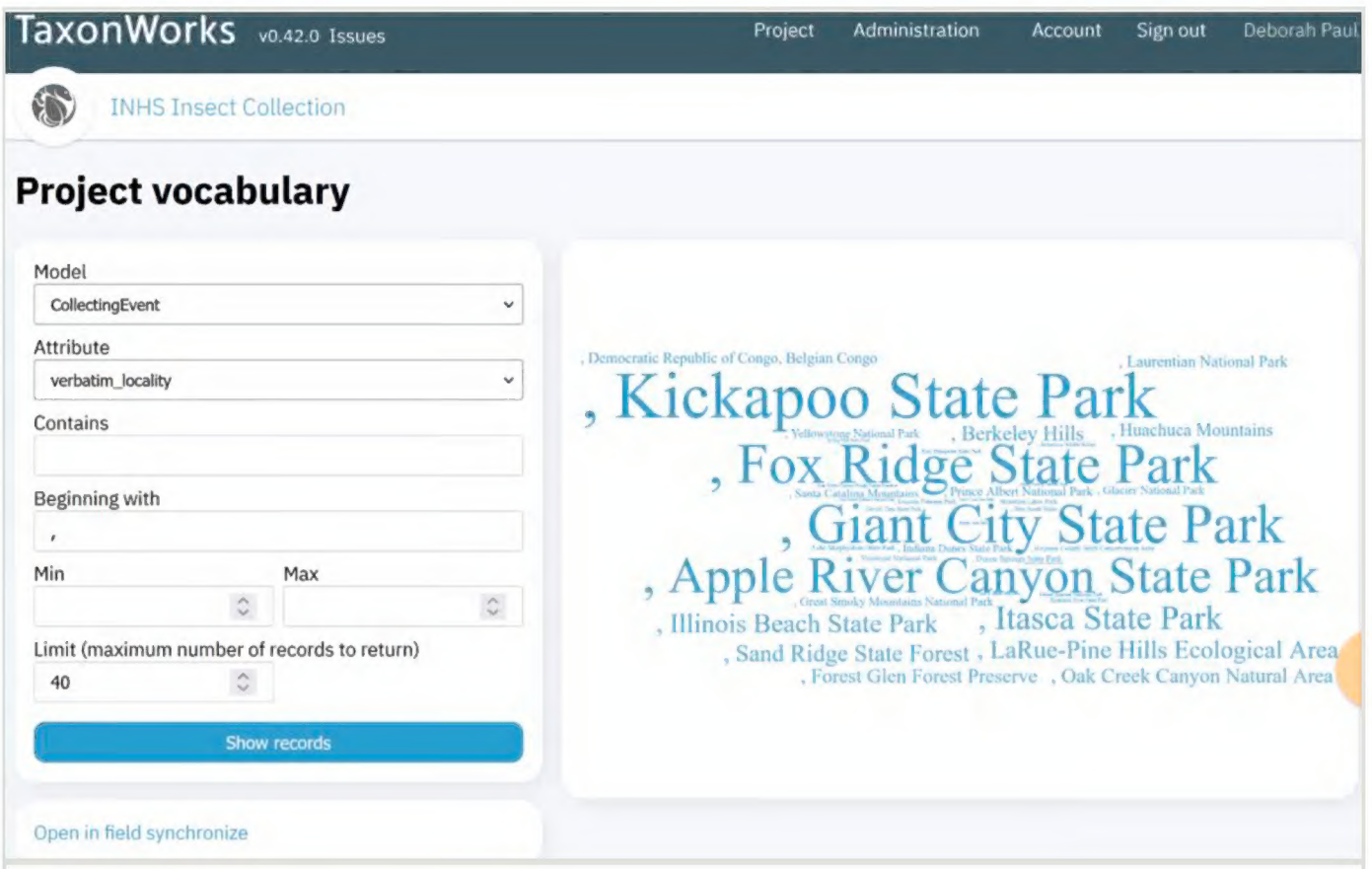

Figure 1.

See actionable **distinct values** and **count** for a given **attribute** using the Project Vocabulary Task in TaxonWorks.

Significant challenges remain to mobilizing data and valuing the activities involved in doing this work. Some groups now want help to move people from email to more collaborative transparent knowledge-sharing tools like GitHub or Slack. This welcome development needs actors who can help make it happen. People still need to receive institutional credit for the diverse expert work done to mobilize data, e.g., for software development, technical support, and knowledge transfer (McDade et al. 2011). We also

note distrust and bias stemming from past setbacks, such as project failures due to sustainability issues (e.g., end of grant), unexpected events (e.g., server/data loss due to weather), and perceived decline in scientific support. These need to be overcome to successfully engage some parties. Questions being asked reveal missing expertise (e.g., someone asking "help me automate my workflow," but no one to help do it).

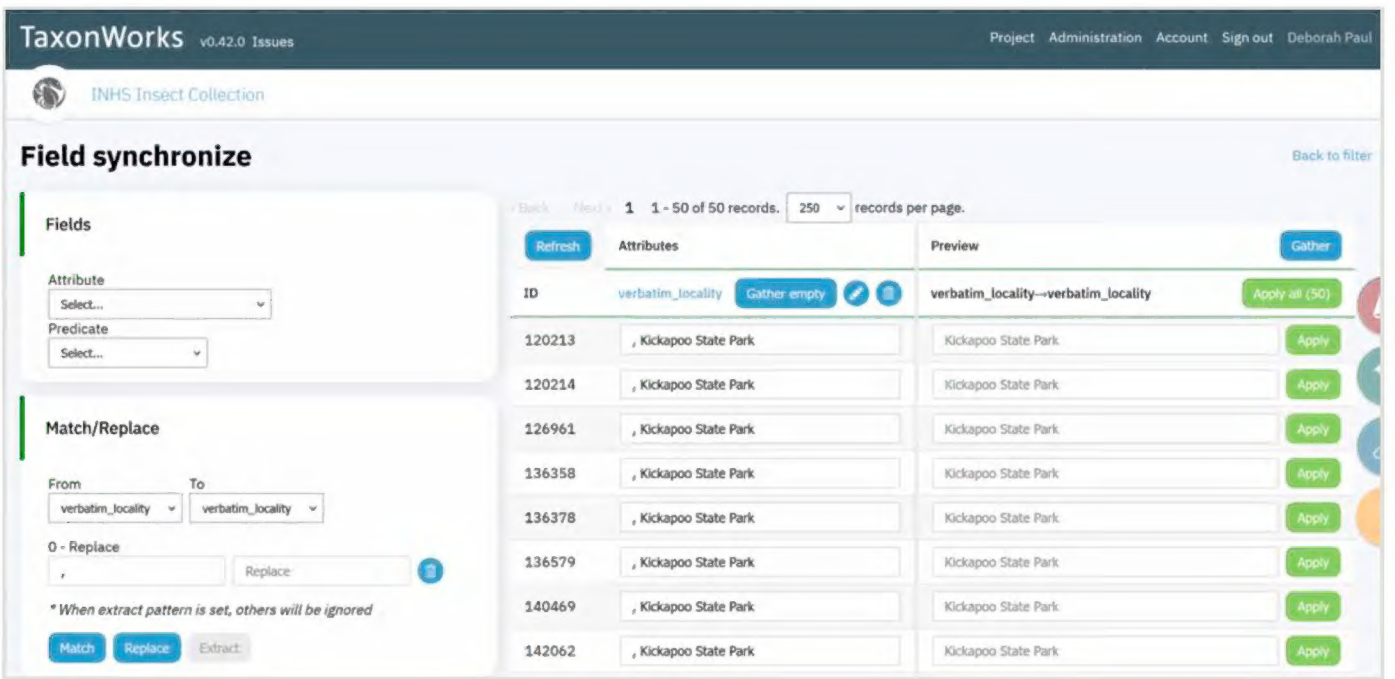

Figure 2.

Use **Field Synchronize** in TaxonWorks to see how any changes will look before you edit.

Collaborating across collections, informatics and other realms (e.g., digital humanities), we possess the components needed to bridge disconnects, inform and encourage culture change. We can imagine a local-to-global integrated help desk open to all; standing sessions at all SPNHC/TDWG conferences; a reciprocal visiting collection manager program; and biodiversity informatics embedded at discipline-specific meetings. We must continue to integrate knowledge-expertise-transparency-agency into our growing common-pool resources.

While sometimes difficult, we see the ongoing interplay between success and challenge as a fruitful route forward, as long as we share.

Keywords

Polycentric Governance, common pool, software development, agency, transparency, TaxonWorks, Species File Group

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Conflicts of interest

The authors have declared that no competing interests exist.

References

- Kading R, Kingston T (2020) Common ground: The foundation of interdisciplinary research on bat disease emergence. PLOS Biology 18 (11). https://doi.org/10.1371/journal.pbio.3000947
- McDade L, Maddison D, Guralnick R, Piwowar H, Jameson ML, Helgen K, Herendeen P, Hill A, Vis M (2011) Biology Needs a Modern Assessment System for Professional Productivity. BioScience 61 (8): 619-625. https://doi.org/10.1525/bio.2011.61.8.8
- Scott H (2023) Polycentric Governance: When Is It Good? Socio-Environmental Synthesis Center (SESYNC) Resource Explainer post. https://www.sesync.org/resources/polycentric-governance-when-it-good. Accessed on: 2024-4-02.